AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A wellbore system for producing seismic energy in an earth formation, comprising:

(a) a cavity configured to be ~~containing a fluid, said cavity~~ disposed in a wellbore; and

(b) a drive source in fluid communication with the ~~said~~ cavity, the drive source configured to inject fluid under pressure into the cavity to generate ~~for generating~~ pressure waves in said cavity, the ~~said~~ cavity producing seismic waves in the earth formation in response to the ~~said~~ pressure waves, wherein the fluid circulates between the cavity and drive source in a closed loop. ~~said cavity and said drive source forming a closed loop through which said fluid circulates.~~

2. (Currently Amended) The wellbore system of claim 1 wherein said drive source is configured to generate ~~generates~~ pressure waves at a selected resonance frequency of said cavity.

3. (Original) The wellbore system of claim 1 wherein said drive source includes at least one of (i) a rotary valve, (ii) an electro-solenoid oscillator, and (iii) a pump.

4. (withdrawn) The wellbore system of claim 1 wherein said drive source for generating pressure waves is activated in a range of predetermined frequencies to create a swept frequency signal input.

5. (withdrawn) The wellbore system of claim 4 wherein said swept frequency signal input is at least one of: i) an upsweep, ii) a downsweep, iii) a nonlinear sweep, a psuedo-random sweep and iv) a random sweep.

6. (Currently Amended) The wellbore system of claim 1 further comprising seismic sensors configured to record said produced seismic waves.

7. (Original) The wellbore system of claim 1 wherein said fluid is at least one of: (i) a liquid, and (ii) a gas.

8. (withdrawn) The wellbore system of claim 1 wherein said cavity is shaped to provide a broad frequency signal for said seismic waves in said earth formation.

9. (Original) The wellbore system of claim 1 wherein said fluid comprises a smart fluid.

10. (Currently Amended) The wellbore system of claim 9 further comprising at least one coil provided adjacent said cavity, said coil configured to provide ~~providing~~ an excitation field for said smart fluid in said cavity when energized.

11. (Original) The wellbore system of claim 10 wherein an effective length of said smart fluid in said cavity can be controlled by selectively energizing said coil.

12. (Original) The wellbore system of claim 11 wherein said at least one coil includes a plurality of segments, each of which can be separately energized.

13. (Original) The wellbore system of claim 10 wherein said at least one coil is configured to provide an adjustable magnitude of intensity for said excitation field.

14. (Original) The wellbore system of claim 10 further comprising a control unit operably coupled with one of said drive source and said coil.

15. (Original) The wellbore system of claim 14 further comprising at least one sensor connected to said control unit, said at least one sensor configured to measure a selected parameter of interest.

16. (Original) The wellbore system of claim 15 wherein said selected parameter of interest is selected from a group consisting of (i) pressure, (ii) temperature, (iii) seismic energy, (iv) flow rate, and (v) frequency of pressure signals generated by said drive source.

17. (Currently Amended) The wellbore system of claim 15 wherein said control unit is configured to adjust ~~adjusts~~ said drive source in response to a measurement provided by said at least on sensor.

18. (Previously Presented) The wellbore system of claim 1 further comprising a control unit operable coupled with said drive source.

19. (Original) The wellbore system of claim 18 further comprising at least one sensor connected to said control unit, said at least one sensor configured to measure a selected parameter of interest.

20. (Original) The wellbore system of claim 19 wherein said selected parameter of interest is selected for a group consisting of (i) pressure, (ii) temperature, (iii) seismic energy, (iv) flow rate, and (v) frequency of pressure signals produced by said drive source.

21. (Currently Amended) The wellbore system of claim 19 wherein said control unit is configured to adjust ~~adjusts~~ said drive source in response to a measurement provided by said at least on sensor.

22. (Currently Amended) A method for producing seismic energy in an earth formation, comprising:

(a) providing a cavity in a wellbore~~, the cavity containing a fluid~~;

(b) injecting fluid under pressure into the cavity ~~pressure pulses into the cavity~~ with a drive source to generate pressure pulses in the cavity such that the cavity produces seismic waves in an adjacent earth formation; and

(c) circulating the fluid between the cavity and the drive source in a closed loop ~~fashion~~.

23. (Original) The wellbore system of claim 22 wherein the fluid is injected in a manner that causes the cavity to resonate.

24. (Original) The method of claim 23 wherein the drive source includes at least one of (i) a rotary valve, (ii) an electro-solenoid oscillator, and (iii) a pump.

25. (Original) The method of claim 22 wherein the fluid comprises a smart fluid.

26. (Original) The method of claim 25 further comprising providing an excitation field for the smart fluid in the cavity using at least one coil.

27. (Original) The method of claim 26 further comprising controlling an effective length of the smart fluid in the cavity by selectively energizing the at least one coil.

28. (Original) The method of claim 26 wherein the at least one coil includes a plurality of segments, each of which can be separately energized.

29. (Original) The method of claim 25 further comprising controlling the injection of the fluid with a control unit.

30. (Original) The method of claim 29 wherein the injection is controlled in response to a measured parameter of interest.

31. (Original) The method of claim 30 wherein the measured parameter of interest is selected from a group consisting of (i) pressure, (ii) temperature, (iii) seismic energy, (iv) flow rate, and (v) frequency of pressure signals produced by the drive source.

32. (Original) The method of claim 22 further comprising a controlling the injection of the fluid with a control unit.

33. (Previously Presented) The wellbore system of claim 1 further comprising a tubular positioned in the wellbore configured to convey a fluid to a surface location, and wherein the cavity is configured to be positioned external to the tubular.

34. (Previously Presented) The method of claim 22 further comprising positioning the cavity external to a tubular configured to convey a fluid to a surface location.

35. (Previously Presented) The wellbore system of claim 1 further comprising a fluid reservoir and a pump, wherein the fluid circulates from the reservoir to pump and from the pump to the cavity.

36. (Previously Presented) The method of claim 22 further comprising circulating the fluid from a reservoir to pump and from the pump to the cavity.